Amendments to the Specification:

[0002] Touch screen devices are widely used in devices such as ATM²s, PDA²s, computers, or point-of-sale devices to allow human input of information to an electronic system. A touch screen is a device~~, as it name implies~~ that, when touched, generates signals identifying a location on a screen where contact was made. Underlying the touch screen is a visual medium such as a cathode ray tube or liquid crystal display that displays an image. The signals from the touch screen are provided to the electronic system to relate the point of contact to the image on the display. In addition, there are signature capture devices which do not include a display beneath the touch screen or touch pad.

[0006] In magnetic based touch screen systems, a grid of magnetic energy is propagated in the X-Y dimension. An example application for ~~of~~ a magnetic based touch screen is for capturing a signature. An active stylus is used to write and capture a signature. Information from the active stylus is provided to a microprocessor that reproduces the X and Y coordinates corresponding to the signature for use by the system.

[0033] FIG. 5 is an illustration of a resistive touch screen 61 coupled to a printed circuit board 63 in accordance with the present invention. Typically, resistive touch screen 61 is coupled by wires 62 to printed circuit board 63 that are exposed and accessible for tapping or monitoring making them a security threat for sensitive information. Integrated circuits 64 are coupled together by interconnect on printed circuit board 63 to form an interface circuit for processing signals on wires 62 from resistive touch screen 61. In an exemplary embodiment, resistive touch screen 61 is biased such that the voltage on wires 62 remain constant during quiescent conditions or when data is being input (screen 61 is touched). The data being input is more secure because monitoring the voltage on wires 62 does not yield any usable information because the voltage ~~one~~ on each wire does not change.

[0062] As mentioned previously, the resistive touch screen dissipates little or no power under quiescent conditions. The electrodes of a conductive layer are coupled to equal voltages producing a net differential voltage of zero across the conductive layer. Further power savings

are achieved in the exemplary embodiment by lowering the reference voltage applied to each conductive layer of the resistive touch screen. The voltage can be lowered because a current, not voltage, is being detected from the resistive touch screen. In an embodiment of the interface circuitry, the reference voltages lowered to a value of approximately 1 volt because the current levels generated at this voltage are easily detected and converted for sensing. Prior art resistive touch screen interface circuits operate at substantially higher voltages (~~ex.~~ e.g., five volts). Moreover, no switching is required between the conductive layers of the resistive touch screen, so minimal noise is generated. Furthermore, the scan rate can be increased to the level of the analog to digital converter, thereby increasing the performance of the system. This results in an increase in sensing accuracy and a reduction in the time required to determine the location where the resistive touch screen is being touched.

[0064] The first and second electrodes of the first conductive layer of resistive touch screen 120 couple to opposing ends of the first conductive layer. Similarly, the first and second electrodes of the second conductive layer of resistive touch screen 120 couple to opposing ends of the second conductive layer. ~~The resistive touch screen, the~~ The direction of current flow through the first and second conductive layers are chosen to have different orientations thereby allowing a location where the first and second conductive layers contact one another to be determined when resistive touch screen is touched. In an embodiment of the apparatus, the first and second electrodes of the first conductive layer are oriented so that current flows through the first conductive layer in the y-direction. Conversely, the first and second electrodes of the second conductive layer are oriented so current flows through the second conductive layer in the x-direction. It should be noted that other orientations could be used and that the different orientations could be applied to either conductive layer of the resistive touch screen.